ONION

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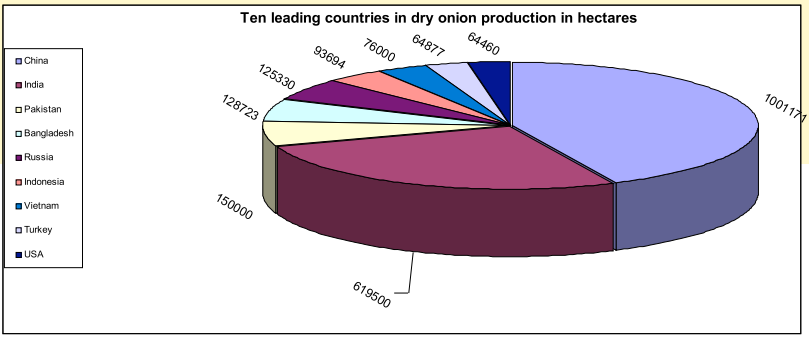
BACKGROUND:

- Onion is the most widely-used flavoring vegetable in the world.
- Its origin is in the tropical center of Western Asia.
- Onions come in three colors: yellow, red, and white.
- The most popular onions are the yellow varieties, which account for almost 90% of the total onion production.



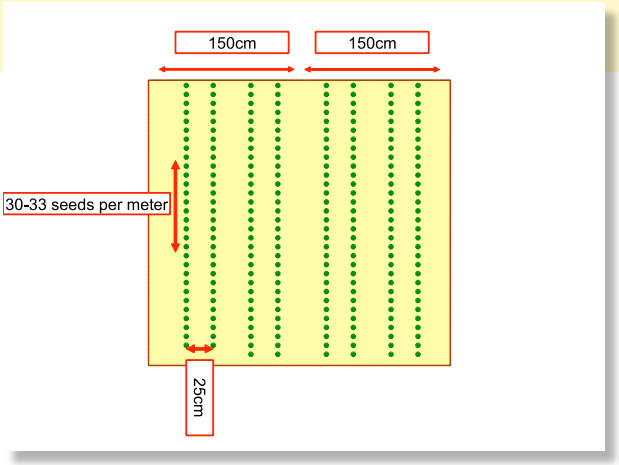
GROWING CONDITIONS:

- Varieties are divided according to the length of day required for bulb development:
  Short day varieties: 11–12 hours
  Intermediate day varieties: 12–14 hours
  Long day varieties: 14 hours or more
- Common yields are:
  Short day varieties: 60–70 tons/ha
  Intermediate day varieties: 80–100 tons/ha
  Long day varieties: 120–140 tons/ha

- Optimum day temperatures are 15–25 °C.
- Onion prefers light and well-drained soils. Highly compacted soils can affect bulb development and cause yield reduction.
- Optimum soil PH is 6–7.

FIELD PREPARATION:

- Onion can be grown from both :seeds and transplants
- Sowing is usually done on elevated beds 1.5–2 m wide.
- Seeds are sown in double rows, with 4–6 rows per bed.
- 800–900 thousand seeds per hectare will give 700–800 thousand plants (90-95% germination).



FERTILIZATION:

Onion reacts strongly to fertilization. It is recommended to apply 20–30 m3 compost per hectare during field preparation. It is recommended performing a soil analysis of the top 20 cm and supplementing necessary nutrients to minimum levels. The rest of the fertilizers should be applied via fertigation.

Minimum NPK levels to be completed with base dressing:

Nitrogen (N)	Phosphorus (P)	Potassium(K)
20 ppm	20 ppm	10 ppm

Fertilizers to be applied via fertigation supplementing to a total of:

Nitrogen (N)	Phosphorus (P_2O_5)	Potassium (K_20)
200–350 kg/ha, divided until fall	50–150 kg/ha, divided until end of leaf formation	100–250 kg/ha, divided until end of leaf formation

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IRRIGATION:

- Total water consumption depends on local conditions and varies from 400–1,000 mm per cycle.
- After sowing, irrigation of 30–40 mm is required for germination, followed by light daily irrigation until seedling mergence. It is critical to keep the soil wet during this period.
- Irrigation can be done according to local evaporation and the crop coefficient.

Stage of development	Sowing to 3 leaves	3 to 6 leaves	6 leaves to end of leaf formation	Bulb formation to leaves fall	Leaves fall stage
Crop coefficient (Kc)	0.7	0.8	0.9–1.00	1.00	0.5
Irrigation frequency (days)	1–3	2–3	3–4	4	4

Irrigation requirements = Kc x Daily evaporation

NAANDANJAIN SOLUTIONS FOR ONION IRRIGATION:

Irrigating onion is not an easy task and can be done with different methods, using different systems. When planning an irrigation system for onion irrigation, keep in mind:

- Maximal daily water requirements
- Water distribution uniformity
- Germination ability
- Application of fertilizers
- Application and activation of herbicides and pesticides
- Susceptibility of the crop to foliar diseases under humid conditions

LOW VOLUME SPRINKLER IRRIGATION:

This irrigation method is characterized by full coverage with high water distribution uniformity, low precipitation rates and low water impact on the soil. This provides a complete solution for irrigation and fertilization during the entire growing period. Since the field is uniformly irrigated, there are no limitations regarding sowing pattern. It is ideal for germination and early stages, essential for both technical irrigations for soil preparation and activation of granular herbicides and pesticides.

Based on the low volume sprinkler method NaanDanJain offers two systems: IrriStand and Amirit. These two systems are designed to provide a comprehensive solution of efficient management for modern onion production during all stages of crop development.

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IRRISTAND SYSTEM

Irristand is a low-flow sprinkler system that simulates light rain. The IrriStand is based on a flexible in-and-out, solid-set PE system. It is specifically designed to successfully meet onion development requirements during all growth stages.

AMIRIT SYSTEM

Based on the IrriStand concept, the Amirit is a solid-set system including 50 mm PE pipes with10–12 meter segments. Its main advantages are flexibility, portability and easy operation.

1/2" SPRINKLER RANGE FOR AMIRIT AND IRRISTAND

Super10

Compact ball-driven, sealed mechanism for spacing up to 12 m. Available with flow regulator.

5022 SD-U

Impact sprinkler for spacing up to 12 m. Reliable at low-pressure.
Available with flow regulator.

5022 SD

The ultimate product for wide spacing (up to 14 m) provides maximum uniform coverage and close-in watering. Provides higher resistance to windy conditions.

2005 AquaMaster

Micro-sprinkler for Irristand, designed to work at extremely low pressure. High water distribution uniformity, with spacing up to 7 m.

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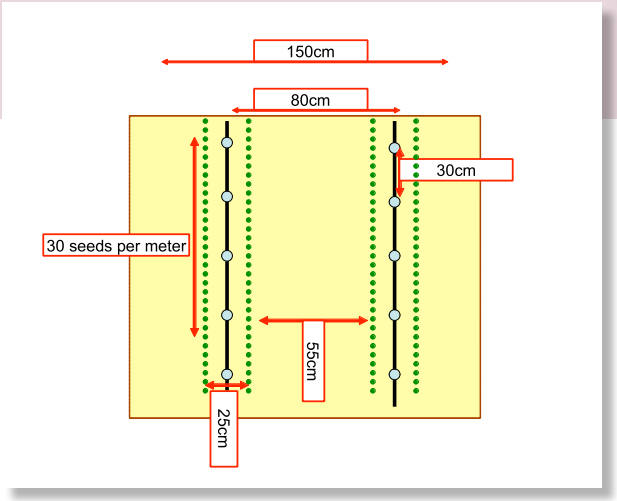
DRIP IRRIGATION:

This is a localized irrigation method characterized by high water use efficiency and minimum humidification of the foliage, thereby reducing susceptibility to foliar diseases. Dripline is located between each 2 rows of plants, allowing water to reach all the plants. Drippers are spaced 20–30 cm apart in order to provide a uniform wetted stripe. Common dripper flow rates are 1-2 l/h or 3-5 l/h/meter for drip tapes



Chapin

High-quality drip tape for seasonal use.


TalDrip

Thin &medium-walled dripline for maximum performance at minimum cost.

TopDrip

Pressure-compensating (PC) and anti-syphon (PC AS), thin to medium-walled dripline for maximum irrigation uniformity (EU–95%) at minimum cost

Naan PC

Heavy duty, pressure-compensating dripline for maximum accuracy in variable topography and long laterals for multiple uses.

SYSTEM COMPARISON TABLE

	Irristand and Amirit systems	Drip systems	Furrows
Water distribution	very good	very good	poor
Water use efficiency	85-90%	95%	50%
Fertilizer use efficiency	good	very good	poor
Herbicide and pesticide activation	possible	not possible	not possible
Germination	excellent	possible	problematic
Technical irrigation for soil preparation	possible	not possible	not possible
Foliage wetting	Yes during irrigation	none	none
Filtration requirement	low	high	none
Use of saline or brackish water	limited	possible	limited

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NaanDanJain is committed to finding the ideal solution for your onion crop, tailored to your local climatic conditions, soil and water properties and budget. Contact our office or your local dealer for further information.

All information should be used only as a guideline. For specific recommendations contact your local agronomist.

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